

SCHEDULES OF EMPLOYER ALLOCATIONS AND
PENSION AMOUNTS BY EMPLOYER

Boston Retirement System
(A Component Unit of the City of Boston, Massachusetts)
As of and for the
Year Ended December 31, 2015
With Report of Independent Auditors

Boston Retirement System
(A Component Unit of the City of Boston, Massachusetts)

Schedules of Employer Allocations and
Pension Amounts by Employer

As of and for the
Year Ended December 31, 2015

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Report of Independent Auditors

Management and The Boston Retirement Board

We have audited the accompanying Schedules of Employer Allocations of Boston Retirement System (the System), a component unit of the City of Boston, Massachusetts, as of and for the year ended December 31, 2015, and the related notes. We have also audited the total for all entities of the columns titled net pension liability, total deferred outflows of resources, total deferred inflows of resources, and total pension expense excluding that attributable to employer-paid member contributions included in the accompanying Schedule of Pension Amounts by Employer of Boston Retirement System as of and for the year ended December 31, 2015 (collectively, the specified column totals and Schedules, respectively), and the related notes.

Management's Responsibility for the Schedules

Management is responsible for the preparation and fair presentation of these schedules in conformity with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of the schedules that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on the Schedules of Employer Allocations and the specified column totals included on the Schedules of Pension Amounts by Employer based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the Schedules of Employer Allocations and specified column totals included on the Schedules of Pension Amounts by Employer are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures on the Schedules of Employer Allocations and specified column totals included on the Schedules of Pension Amounts by Employer. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the Schedules of Employer Allocations and specified column totals included on the Schedules of Pension Amounts by Employer, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the Schedules of Employer Allocations and specified column totals included in the Schedules of Pension Amounts by Employer in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the Schedules of Employer Allocations and specified column totals included on the Schedules of Pension Amounts by Employer.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, the Schedules referred to above present fairly, in all material respects, the employer allocations and net pension liability, total deferred outflows of resources, total deferred inflows of resources, and total pension expense excluding that attributable to employer-paid member contributions for the total of all participating entities for Boston Retirement System as of and for the year ended December 31, 2015, in conformity with U.S. generally accepted accounting principles.

Other Matter

We have audited, in accordance with auditing standards generally accepted in the United States of America, the financial statements of Boston Retirement System, as of and for the year ended December 31, 2015, and our report thereon, dated December 8, 2016, expressed an unmodified opinion on those financial statements.



Restriction on Use

Our report is intended solely for the information and use of Boston Retirement System management, the Boston Retirement Board, Boston Retirement System employers, and their auditors and is not intended to be and should not be used by anyone other than these specified parties.

Ernst + Young LLP

December 8, 2016

Boston Retirement System
(A Component Unit of the City of Boston, Massachusetts)

Schedule of Employer Allocations

As of and for the Year Ended December 31, 2015

Employer	2015 Actual Employer Contributions	Employer Allocation Percentage
Group A		
City of Boston (the City)*	\$ 175,619	81.7068%
Boston Housing Authority*	11,468	5.3355
Boston Redevelopment Authority*	2,211	1.0285
Boston Water and Sewer Commission*	9,058	4.2141
Boston Public Health Commission*	16,582	7.7151
Subtotal Participating Employers, excluding Sheriff of Suffolk County	<u>214,938</u>	<u>100.0000</u>
Group B		
Sheriff of Suffolk County (Retirees as of December 31, 2009, funded by the City)*	3,875	100.0000
Subtotal Participating Employers	<u>218,813</u>	
Group C		
Commonwealth of Massachusetts (Other contributing entity – City of Boston Teachers)	<u>120,434</u>	<u>100.0000%</u>
Total	<u>\$ 339,247</u>	

* Indicates participating employer of the Plan

See accompanying notes.

Boston Retirement System
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Schedule of Pension Amounts by Employer

As of and for the Year Ended December 31, 2015

Entity	Deferred Outflows of Resources						Deferred Inflows of Resources					Pension Expense			
	Net Pension Liability	Differences Between Expected and Actual Experience	Net Difference Between Projected and Actual Investment Earnings on Pension Plan	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Outflows of Resources	Differences Between Expected and Actual Experience	Net Difference Between Projected and Actual Investment Earnings on Pension Plan	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Inflows of Resources	Proportionate Share of Pension Expense	Pension Expense Related to Specific Liabilities of Individual Employers	Net Amortization of Deferred Amounts From Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Employer Pension Expense Excluding That Attributable to Employer-Paid Member Contributions
Group A															
City of Boston (the City)*	\$ 1,596,527,254	\$ -	\$ 297,345,746	\$ 4,954,285	\$ 24,334,617	\$ 326,634,648	\$ -	\$ -	\$ 62,564,811	\$ -	\$ 62,564,811	\$ 218,923,876	\$ -	\$ 5,388,507	\$ 224,312,383
Boston Housing Authority*	104,255,320	-	19,417,066	323,521	-	19,740,587	-	-	4,085,564	14,406,878	18,492,442	14,296,016	-	(3,158,703)	11,137,313
Boston Redevelopment Authority*	20,095,786	-	3,742,748	62,361	-	3,805,109	-	-	787,515	1,512,665	2,300,180	2,755,637	-	(346,659)	2,408,978
Boston Water and Sewer Commission*	82,342,701	-	15,335,944	255,523	1,824,004	17,415,471	-	-	3,226,851	4,439,666	7,666,517	11,291,247	-	(431,932)	10,859,315
Boston Public Health Commission*	150,750,374	-	28,076,555	467,803	27,213	28,571,571	-	-	5,907,616	5,826,625	11,734,241	20,671,654	-	(1,451,213)	19,220,441
Subtotal Participating Employers, excluding Sheriff of Suffolk County	1,953,971,435	-	363,918,059	6,063,493	26,185,834	396,167,386	-	-	76,572,357	26,185,834	102,758,191	267,938,430	-	-	267,938,430
Group B															
Sheriff of Suffolk County (Retirees as of December 31, 2009, funded by the City)*	25,381,647	-	-	-	-	-	-	-	-	-	-	1,964,933	-	-	1,964,933
Subtotal Participating Employers, including Sheriff of Suffolk County	1,979,353,082	-	363,918,059	6,063,493	26,185,834	396,167,386	-	-	76,572,357	26,185,834	102,758,191	269,903,363	-	-	269,903,363
Group C															
Commonwealth of Massachusetts (Other contributing entity – City of Boston Teachers)	2,402,266,831	-	89,750,974	207,851,113	N/A	297,602,087	-	-	-	N/A	-	235,210,919	-	-	235,210,919
Commonwealth of Massachusetts (state reimbursed COLA)	28,629,794	-	-	555,512	N/A	555,512	-	4,224,578	-	N/A	4,224,578	1,332,176	-	-	1,332,176
Subtotal Commonwealth of Massachusetts	2,430,896,625	-	89,750,974	208,406,625	N/A	298,157,599	-	4,224,578	-	N/A	4,224,578	236,543,095	-	-	236,543,095
Total for All Entities	\$ 4,410,249,707	\$ -	\$ 453,669,033	\$ 214,470,118	\$ 26,185,834	\$ 694,324,985	\$ -	\$ 4,224,578	\$ 76,572,357	\$ 26,185,834	\$ 106,982,769	\$ 506,446,458	\$ -	\$ -	\$ 506,446,458

* Indicates participating employer of the Plan

See accompanying notes.

Boston Retirement System
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**Notes to Schedules of Employer Allocations and
Pension Amounts by Employer**

December 31, 2015

1. Plan Description

The following description of the Boston Retirement System (formerly, the State-Boston Retirement System) (the System, BRS or the Plan) is provided for general information purposes only. Participants should refer to Chapter 32 of the Massachusetts General Law (M.G.L.) for more detailed information. The Board of Trustees is primarily responsible for the administration of the System and consists of five members as follows: the City Auditor (who serves as an ex officio member), a second member appointed by the Mayor, a third and fourth member elected by active or retired members, and a fifth member chosen by the other four members (or appointed by the Mayor if the other four members do not agree on a selection within 30 days of a vacancy).

General

The Plan is a cost-sharing, multiple-employer qualified defined benefit governmental pension plan established under Chapter 32 of the M.G.L. The Plan provides pension benefits for participating employees of the following plan member governmental units:

- City of Boston (the City)*
- Commonwealth of Massachusetts (Other contributing entity – contributing towards City of Boston Teachers pensions)
- Boston Redevelopment Authority*
- Boston Housing Authority*
- Boston Water and Sewer Commission*
- Boston Public Health Commission*
- Sheriff of Suffolk County (Retirees as of December 31, 2009, funded by the City)*

* Indicates participating employer of the Plan

Boston Retirement System
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**Notes to Schedules of Employer Allocations and
Pension Amounts by Employer (continued)**

1. Plan Description (continued)

At January 1, 2014, system membership consisted of the following:

Active plan members	20,278
Retirees and beneficiaries receiving benefits	14,341
Inactive members entitled to a return of contributions	7,983
Inactive members entitled to, but not yet receiving benefits	808
Total membership	<u>43,410</u>
Number of participating employers	6

The Commonwealth of Massachusetts (the Commonwealth) is responsible for funding the employer portion of all teacher pensions in the Commonwealth. All teachers in the Commonwealth are members of the Massachusetts Teachers Retirement System, with the exception of teachers employed by the City (Boston Teachers), who are members of the System. Although Boston Teachers are members of the System, the Commonwealth is the responsible contributing entity. Additionally, the Commonwealth reimburses the Plan for all cost-of-living increases paid to recipients that were awarded before 1997.

Significant Provisions and Requirements

Participation in the System is mandatory for all permanent, full-time, and certain part-time employees immediately upon the commencement of employment. Participants who resign from employment or are receiving workers' compensation benefits and who are not eligible to receive a retirement allowance are entitled to request a refund of their accumulated total deductions. In addition, those participants who resign voluntarily with less than ten years of service are entitled to receive 3% per year interest; all others receive interest that has accrued on their cumulative deductions at the regular interest rate (0.1% at December 31, 2015).

Employees with ten or more years of service having attained age 55 are entitled to pension benefits; an earlier retirement is allowed upon completion of 20 years of service. The System provides for retirement allowance benefits up to a maximum of 80% of a participant's highest consecutive three-year average annual rate of regular compensation (highest consecutive five-year average for those members who join the System on or after April 2, 2013). Benefit

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**Notes to Schedules of Employer Allocations and
Pension Amounts by Employer (continued)**

1. Plan Description (continued)

payments are based upon a participant's age, length of creditable service, regular compensation, and group classification. Participants become vested after ten years of creditable service. Effective July 1, 1998, Chapter 32 of the M.G.L. assigned the authority to establish and amend benefit provisions and grant cost-of-living increases for the Plan to the Boston Retirement Board.

If a member in service dies due to causes unrelated to his or her job, the surviving spouse and/or surviving dependent children may receive retirement allowance benefits, either in a lump sum or in the form of an annuity, based on the length of service, contributions, and age. In the event there are no spouse and/or dependent children named, other beneficiaries may be entitled to a lump-sum distribution. Participants who become permanently and totally disabled from further duty may be eligible to receive accidental or ordinary disability retirement benefits.

Accidental disability is provided to members with incapacitation resulting from a work-related injury or hazard. Generally, annual pension benefits are provided based on 72% of the annual rate of regular compensation a member earned while an active employee on date of injury or average annual rate of regular compensation. Ordinary disability is available to any member whose permanent incapacitation is not work-related and has attained ten years of creditable service. Such benefits are provided as if the member had attained the age of 55 (or actual age if over 55) based on the amount of creditable service actually earned. Limits are placed on how much a disability employee can earn from other sources while collecting a disability retirement pension.

2. Summary of Significant Accounting Policies

Investments are reported at fair value. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (an exit price).

Following is a description of the valuation techniques and inputs used for each major class of assets and liabilities measured at fair value.

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**Notes to Schedules of Employer Allocations and
Pension Amounts by Employer (continued)**

2. Summary of Significant Accounting Policies (continued)

Short-Term, Equity and Fixed Income Investments

Securities traded on a national or international exchange are valued at the last reported sales price at current exchange rates. Certain fixed income securities not traded on an exchange are valued using a matrix pricing technique. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices.

Pooled Funds

The fair value of shares in managed investment pools is based on unit values reported by the funds.

Alternative Investments

Alternative investments include hedge funds, holdings through commingled limited partnerships of venture capital funds, including equity interests in early, middle, and later stage companies, as well as debt and equity interests in buyouts, acquisitions, restructurings, mezzanine structures and special situations, such as litigation or spin-off activities. These investments are carried at the limited partnership interest or redemption value, the equivalent of net asset value, which approximates fair value. Values assigned to such investments are based on available information and do not necessarily represent amounts that may ultimately be realized in liquidation. Liquidation values depend largely on future circumstances, including marketability, and frequently cannot reasonably be estimated until at, or near, the liquidation date.

Real Estate

Real estate investments consist of interests in commercial properties held by various partnerships and other limited liability entities, some of which utilize debt financing. Fair values of such holdings are reported based on the net asset values of the entities, which are estimated using third-party appraisals and other information provided by property managers.

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**Notes to Schedules of Employer Allocations and
Pension Amounts by Employer (continued)**

2. Summary of Significant Accounting Policies (continued)

Basis of Accounting

The Schedules of Employer Allocations and Pension Amounts by Employer for the System present amounts that are considered elements of the financial statements of the System or of its participating employers. Accordingly, they do not purport to be a complete presentation of the financial position or changes in financial position of the System or of its participating employers. The amounts presented on the Schedules were prepared in accordance with U.S. generally accepted accounting principles. Such preparation requires management of the System to make a number of estimates and assumptions related to the reported amounts. Due to the inherent nature of these estimates, actual results could differ from those estimates.

3. Allocation Percentage Methodology

Although the System administers one cost-sharing multiple-employer defined benefit pension plan, separate (sub) actuarial valuations are prepared to determine the actuarial determined contributions rates by group for a) the participating employers of the Plan excluding Sheriff of Suffolk County, b) Sheriff of Suffolk County and c) the Commonwealth. The measurement of the collective net pension liability, deferred outflows of resources, deferred inflows of resources, and pension expense excluding that attributable to employer-paid member contributions are determined separately for each group.

Governmental Accounting Standards Board (GASB) Statement No. 68, *Accounting and Financial Reporting for Pensions*, requires participating employers in the System to recognize their proportionate share of the collective net pension liability, collective deferred outflows of resources, collective deferred inflows of resources and collective pension expense excluding that attributable to employer-paid member contributions. The employer allocation percentages presented in the schedule of employer allocations and applied to amounts presented in the schedule of pension amounts by employer are based on the ratio of each participating employer's contributions to the total employer contributions of the respective group during the year ended December 31, 2015. The employer allocation percentages have been rounded for presentation purposes. Therefore, use of these percentages to recalculate individual employer amounts presented on the Schedules of Employer Pension Amounts may result in immaterial differences due to this rounding.

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**Notes to Schedules of Employer Allocations and
Pension Amounts by Employer (continued)**

4. Contributions

Participating employers are required to pay into the System their share of the remaining actuarially determined contribution and plan administration costs, which are apportioned among the participating employers based on an actuarial computation.

As a condition of participation, employees are required to contribute 5% of their salary if hired prior to January 1, 1975; 7% if hired after January 1, 1975, and before January 1, 1984; 8% if hired after January 1, 1984, and before July 1, 1996; and 9% if hired after July 1, 1996. Employees hired after January 1, 1979, contribute an additional 2% of earnings in excess of \$30,000 per year. Additionally, teachers who became members of the System after June 30, 2001, or other teachers who elect this option, are required by law to contribute 11% of their salary. Overtime and certain additional earnings are not subject to these assessments and are not considered in the determination of final average salary.

5. Collective Net Pension Liability and Actuarial Information

The components of the net pension liability of the participating employers are as follows:

	December 31, 2015
Total pension liability	\$ 9,969,543,077
Plan fiduciary net position	5,559,293,370
Employers' net pension liability	\$ 4,410,249,707
Plan fiduciary net position as a percentage of the total pension liability	55.76%

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of January 1, 2014, with update procedures used to roll forward the total pension liability to December 31, 2015. The total pension liability for the December 31, 2014 measurement date was determined by using an actuarial valuation as of January 1, 2014. These valuations used the following actuarial assumptions, applied to all periods included in the measurement:

Inflation: 3.25% for BRS excluding Teachers, 4.50% for Teachers

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**Notes to Schedules of Employer Allocations and
Pension Amounts by Employer (continued)**

5. Collective Net Pension Liability and Actuarial Information (continued)

Salary increases:

Years of Service	Boston Teachers	BRS Excluding Boston Teachers		
		Group 1	Group 2	Group 4
0	7.50%	4.00%	4.25%	4.50%
1	7.10	4.00	4.25	4.50
2	7.00	4.00	4.25	4.50
3	6.90	4.00	4.25	4.50
4	6.80	4.00	4.25	4.50
5	6.70	4.00	4.25	4.50
6	6.60	4.00	4.25	4.50
7	6.50	4.00	4.25	4.50
8	6.30	4.00	4.25	4.50
9	6.10	4.00	4.25	4.50
10	5.90	4.00	4.25	4.50
11	5.70	4.00	4.25	4.50
12	5.20	4.00	4.25	4.50
13	4.70	4.00	4.25	4.50
14	4.35	4.00	4.25	4.50
15–16	4.20	4.00	4.25	4.50
17–19	4.10	4.00	4.25	4.50
20 and later	4.00	4.00	4.25	4.50

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**Notes to Schedules of Employer Allocations and
Pension Amounts by Employer (continued)**

5. Collective Net Pension Liability and Actuarial Information (continued)

Investment rate of return	7.75% for BRS excluding Boston Teachers and 7.50% for Boston Teachers, net of investment expenses, including inflation
Cost of Living Adjustments	3.00% of first \$13,000

Mortality Rates:

Healthy:	RP-2000 Employee and Healthy Annuitant Mortality Tables projected generationally using Scale BB2D from 2009 for BRS excluding Boston Teachers and RP-2014 Employee and Healthy Annuitant Mortality Tables projected generationally using Scale BB2D from 2014 for Boston Teachers
Disabled:	RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2015 for BRS excluding Boston Teachers and RP-2014 Healthy Annuitant Mortality Table set forward four years projected generationally using Scale BB2D from 2014 for Boston Teachers

Boston Retirement System
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Notes to Schedules of Employer Allocations and
Pension Amounts by Employer (continued)

5. Collective Net Pension Liability and Actuarial Information (continued)

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of December 31, 2015, are summarized in the following table:

Asset Class	BRS Excluding Boston Teachers - Target Allocation	Boston Teachers - Target Allocation	Long-Term Expected Real Rate of Return
Domestic equity	25%	19%	6.49%
International developed markets equity	19	17	7.16
Emerging markets equity	8	6	9.46
Core fixed income	11	13	1.68
High yield fixed income	13	10	4.76
Real estate	10	10	4.37
Commodities	-	4	4.13
Short-term government money market	-	-	1.11
Hedge fund, GTAA, Risk parity	7	11	3.60
Private equity	7	10	11.04

Discount rate: The discount rate used to measure the total pension liability was 7.75% for the BRS excluding Boston Teachers and 7.50% for Boston Teachers. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that the Boston Retirement System contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the

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**Notes to Schedules of Employer Allocations and
Pension Amounts by Employer (continued)**

5. Collective Net Pension Liability and Actuarial Information (continued)

pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the collective net pension liability to changes in the discount rate. The following presents the net pension liability of the Boston Retirement System, calculated using the discount rate of 7.75% for the BRS excluding Boston Teachers and 7.50% for the Boston Teachers, as well as what the Boston Retirement System's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.75% for the BRS excluding Boston Teachers and 6.50% for the Boston Teachers) or 1-percentage-point higher (8.75% for the BRS excluding Boston Teachers and 8.50% for the Boston Teachers) than the current rate:

	1% Decrease	Current Discount	1% Increase
Group A	\$ 2,639,968,262	\$ 1,953,971,435	\$ 1,373,740,327
Group B	28,253,464	25,381,647	22,952,602
Group C	2,877,433,684	2,430,896,625	2,059,216,411
Boston Retirement System's net pension liability as of December 31, 2015	\$ 5,545,655,410	\$ 4,410,249,707	\$ 3,455,909,340

6. Collective Deferred Outflows of Resources and Deferred Inflows of Resources

The following presents a summary of changes in the collective deferred outflows of resources and deferred inflows of resources for the year ended December 31, 2015:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$ —	\$ —
Changes of assumptions	214,470,118	76,572,357
Changes of benefit terms	—	—
Net difference between projected and actual earnings on pension plan investments	453,669,033	4,224,578
Total	\$ 668,139,151	\$ 80,796,935

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Notes to Schedules of Employer Allocations and
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**6. Collective Deferred Outflows of Resources and Deferred Inflows of Resources
(continued)**

Amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Participating employers' fiscal year ending June 30:	Group A	Group B	Group C	Total
2017	\$ 83,899,939	\$ –	\$ 66,288,854	\$ 150,188,793
2018	83,899,939	–	66,288,854	150,188,793
2019	83,899,938	–	66,288,853	150,188,791
2020	57,023,848	–	64,789,298	121,813,146
2021	(15,314,469)	–	30,277,162	14,962,693
Total	<u>\$ 293,409,195</u>	<u>\$ –</u>	<u>\$ 293,933,021</u>	<u>\$ 587,342,216</u>

7. Pension Expense

The components of allocable pension expense for the year ended December 31, 2015 are as follows:

Service cost	\$ 194,996,031
Interest	739,499,439
Contributions – employee	(147,090,451)
Projected earnings on pension plan investments	(439,772,802)
Administrative expenses	8,625,449
Recognized portion of current period difference between projected and actual earnings on pension plan investments	91,079,379
Recognized portion of current year period assumption change	14,962,690
Recognition of deferred outflows of resources	44,146,723
Total pension expense	<u>\$ 506,446,458</u>